TRANSPORTATION

This section addresses various modes of transportation, including aviation, maritime shipping and public transit.

BACKGROUND AND VULNERABILITIES

Transportation vehicles and systems increasingly rely on automation to move people and goods quickly, safely and economically. Everyone is aware of the computer systems that enable the air traffic control system, and we are increasingly reminded of the computers in our automobiles, but few of us have experience with other modes of transportation that are also heavily dependent on information technology and embedded systems.

NFL vs. Y2K, Jan. 1:

As a precaution against Y2K problems, the NFL has suggested that teams playing road games the weekend of Jan. 2 plan to travel on Dec. 31 rather than Jan. 1, when they normally would travel.[1]

A good example of this is the "Susan Maersk," a container ship operated by the Maersk Line. This ship is 1,138 feet long and transports 6,600 twenty-foot trailers. Amazingly, through automation, it manages to accomplish its tasks with a crew of only 15. It does so with a computer that links 8,000 sensors in the engine room and cargo that enable safe navigation and operations.

This computerization of operations in transportation has introduced the Y2K vulnerability that other sectors face. In addition, transportation systems depend on external services and utilities, such as telecommunications links and electric power, which in themselves are automated and potentially Y2K trouble-prone. A good example of this dependency was demonstrated on September 15, 1999 when 5,000 Maryland commuters had to make alternate transportation arrangements at the last minute.[2] The MARC passenger trains which they relied on to get to and from work could not be managed because the CSX dispatching center, more than 1,000 miles away in Jacksonville, Florida, could not be adequately staffed due to the emergency created by Hurricane Floyd. Additionally, beginning-to-end transportation is often intermodal, so successful remediation in transportation requires fixing all the links in the transportation chain. For instance, it's not satisfactory in New York City for the ferries to run but the subways to be idle.

As a final matter, there is a strong connectivity to and dependence on international transportation partners. As a result, we must be concerned about the successful remediation of foreign transportation systems for the good of our economy, our national security, and our personal travel desires.

So far, Y2K and Y2K-like problems in the transportation sector have

been mere inconveniences and annoyances. Among these have been:

- taximeter problems in Singapore and Sweden in January 1999;
- thousands of bags lost, at least temporarily, in Paris during a Y2K upgrade effort;
- automobile global position system (GPS) receiver failures in Japan, August 22, 1999;[3]
- motor vehicle inspection sticker problems in New York; and
- erroneous traffic citations issued in Ontario, Canada.

WHAT IS BEING DONE?

Committee

In the transportation sector, the Committee:

- held a hearing on the transportation sector on September 10, 1998 and conducted a survey of Y2K preparations in that sector;[4]
- continued throughout 1999 to track the progress being made in various transportation modes, especially those where there were greater concerns about government-owned or -operated systems such as those managed by the Federal Aviation Administration (FAA) and the U.S. Coast Guard;
- held a hearing on the Y2K readiness of the international oil industry from the oil fields to the gasoline pump;[5] and
- scheduled a hearing for September 30, 1999, on the overall global readiness of the aviation and maritime enterprises for Y2K.

President's Y2K Council

The Executive Branch has used a threefold approach to transportation Y2K readiness. The first has been to repair, replace, or retire federal systems upon which transportation relies. The second has been to conduct a large number of outreach activities, nationally and internationally. The third has been to generate contingency plans for services provided to U.S. transportation operators and to support the development of internationally coordinated contingency plans. The President's Y2K Council held one of its industry roundtables on the public transit sector on July 14, 1999. In addition, the Council produced three quarterly assessments of the transportation sector as part its overall quarterly assessments. Highlights[6] of the most recent assessment follow:

- According to the Aviation Millennium Project, major U.S. and Canadian airlines have completed 95% of their remediation and implementation, with full completion expected by the end of September.
- All FAA systems, including air traffic, are Y2K compliant.
- 61% of 37 U.S. ports report being largely or close to being completed with implementation work, according to an April 1999 assessment.

- According to a February 1999 American Trucking Association survey of 3,600 member trucking companies, implementation is, on average, 61% complete.
- Results from a Federal Railroad Administration survey of the largest freight railroads are expected in September 1999.

Department of Transportation

The Department of Transportation (DOT) leads the President's Y2K Council transportation sector working group, which also includes the U.S. Postal Service, the Department of the Interior, the Department of the Treasury (U.S. Customs Service), the Department of State, the Department of Defense, the National Aeronautics and Space Administration, and the Department of Agriculture. The working group has met twice in 1999 and has generated the Council's transportation sector assessments. The working group also produced a transportation sector Y2K website[7] for outreach and communication.

Other significant DOT actions include:

- Issuing RSPA-99-5143 (Notice No. 99-7): Hazardous Materials Transportation Advisory; Year 2000 (Y2K) Conversion. This is a notice to parties subject to the Hazardous Materials Regulations that DOT does not intend to reduce civil penalties for their violation or withdraw notices of probable violation, unless the responsible party can show a timely and appropriate level of effort to identify and prevent such occurrences.[8]
- Announcing that it is heading an international Year 2000 civil aviation evaluation committee, which is reviewing and evaluating information about the Y2K readiness of foreign air traffic service providers, foreign airports, and foreign air carriers flying into and out of the U.S.[9] As reported by the DOT Inspector General,[10] *"The Committee developed a comprehensive approach which places emphases on collecting information from multiple sources, having representatives from multiple agencies review the information, sharing evaluation (scoring) results with all related parties, and giving countries the opportunity to enhance Year-2000 readiness ..."*
- Issuing Advisory Bulletin ADB 98-01 to raise awareness within the pipeline operation community.[11]
- Planning to give the ICC information about [transportation and infrastructure] system operations outside the U.S. collected from our embassies, international organizations, and other posts (along with the Departments of State and Defense.) [12]

Within DOT, specific agencies have the lead role in remediating federal systems that support various transportation modes and in reaching out within their transportation sectors to raise awareness and spur remediation and contingency planning in the non-federal sectors. For the remainder of this section, the discussion will be aligned to transportation modes such as aviation and railroads.

The discussion will include public and private sector efforts in the same passages for convenience.

Aviation*

The FAA had the largest number of systems to remediate, replace, or retire within DOT and possibly the second-largest number of systems in the federal government to remediate in total, after the Department of Defense. As of June 30, 1999, the FAA declared it was fully Y2K compliant.[13] This statement covers a total of 628 systems, 424 of which were declared mission-critical. According to the FAA announcement, data verifying that all of its systems were implemented as Y2K compliant was examined and approved by an independent verification and validation contractor. In addition, the FAA Office of the Inspector General said, "*We have completed our sample review of 14 FAA mission-critical systems, including 11 Air Traffic Control systems deemed implemented by June 30, 1999. Based on our review, we consider these 14 systems to be implemented*." [14]

FAA is now concentrating its efforts in three important areas: maintaining Y2K compliant systems, reaching out domestically and internationally to aviation partners, and preparing and testing business continuity and contingency plans.[15] As part of this testing, FAA is carrying out an extensive series of test with foreign Air Traffic Service providers. Tests have been planned for all regions that are adjacent to U.S. air space.

On March 5, 1998, the members of the Air Transport Association (ATA) created the Aviation Millennium Project[16] to help members prepare for Y2K. The member airlines of the Regional Airline Association (RAA) and the Air Transport Association of Canada (ATAC) have joined the program, which has also been endorsed by the American Association of Airport Executives (AAAE) and the Airports Council International, North America (ACI-NA). The most recent status information, from July 1, 1999, is that, *"U.S. and Canadian airlines are 95% finished with Y2K remediation efforts and that they will continue testing throughout the year*." [17] The other positive news in that announcement was that Boeing and Airbus had completed their Y2K flight testing, showing there were no safety of flight issues related to Y2K. Boeing had reported earlier in the year on the successful completion of a series of flight tests demonstrating Y2K compliance.[18]

The Y2K readiness of domestic airports is not as positive or definite as other segments of aviation. The GAO summarized the situation early in 1999 this way:

The nation's airports have been making progress in preparing for the year 2000. However, there is substantial variation in the progress they have achieved and the approaches they have been taking. Among the airports responding to our survey, about one-third reported that they would meet the June 30, 1999, date

* The first part of this section will be concerned with domestic aviation issues only. International issues will be covered further down.

FAA recommended to complete preparations for addressing the Year 2000 date change; another one-third did not report that they would meet this date but had begun contingency planning to help ensure continued operations if equipment malfunctions; and a final one-third did not meet either of these criteria. This final third are mostly small airports, but they include 9 of the nation's 50 largest airports. Also, many airports were not following a comprehensive and structured approach, which is the most effective way to prepare for the year 2000. The airports that responded to our questionnaire have completed, on average, less than half of their repair work.[19]

The potentially vulnerable areas of an airport are shown in Table 1, a list of functional areas that may rely on automated systems. Within each functional area there may be multiple systems that require assessment and possibly remediation. A more comprehensive "Y2K Airfield System List" can be found on the FAA's Office of Airports Year 2000 Website.[20]

Table 1: Air field Functional Areas That May Be Automated

- **Administration**
- **Airport Services**
- **Baggage Handling Systems**
- **Cargo Handling Systems**
- **IT Systems**
- **Communications**
- **Environmental Systems**
- **Facilities Maintenance**
- **Information Displays**
- **Financial Systems**
- **Fuel Services**
- **Ground Support/Ramp Services**
- **Jet bridge operations**
- **Navigational Aids**
- **Noise Abatement**
- **Operations**
- **Parking**
- **Passenger Services**
- **Ramp Operations**
- **Security/Public Safety**
- **Weather Systems/Services**

In June 1998 the FAA wrote an awareness letter to the approximately 5,300 public use airports in the U.S., as well as to the airport equipment manufacturers.[21] More recently, the FAA has issued a notice of proposed rulemaking "*to require certain airport operators to conduct one-time readiness check of certain airfield equipment and systems starting January 1, 2000, and report the results of these checks to the FAA*." This proposal would also temporarily revise the time period these airport operators have to repair or replace certain emergency equipment." [22] The responses to this proposed rule have been generally positive and may be reviewed at the Department of Transportation's "Docket Management System."[23]

According to FAA Administrator Garvey, "*As of July 31, 1999, the FAA completed visits to the top 150 airports in the United States. The vast majority of those reported to us that they plan to complete their Y2K repairs by the end of September, and all of them expect to be completed by December. The FAA has identified 20 systems that may be used to comply with Part 139 regulatory requirements. We have also identified which of these systems exist at each airport. Of the 20 systems, we have identified 7 that could have an immediate impact on safety. We have told airport operators that we expect these systems to be Y2K compliant by October 15 or an alternate means of compliance*

needs to be developed to meet the requirements of the regulations. We also have a plan in place for continued contact with airport operators on a regular basis to monitor the status of their systems."[24]

Several trade associations have joined forces to raise awareness and promote Y2K readiness at the nation's airports, including the ACI-NA, the ATA, the AAAE,[25] and the Rural Airport Association. The survey data in the FAA's Year 2000 Status Report released June 18, 1999 was current to March 1999. The data in that survey indicated airports had a long way to go to be ready for Y2K. The FAA's Office of Airports Safety and Standards conducted a survey in June of 1999, which was updated in mid-August.[26] However the FAA has not released the results of the survey at this time.

Turning to international aviation issues, three organizations stand out as having the primary responsibility in this area. The first is the International Civil Aviation Organization (ICAO),[27] a UN-affiliated organization comprised of 185 member states. ICAO has had in place a Y2K program to support member states since 1997.

The main objectives of the ICAO program are to help member states prepare for Y2K, to assess the overall readiness of the international aviation network, and to aid in the preparation of regional contingency plans. Regional contingency plans were to be completed by August 12, 1999. In several regions of the world, measures will be taken to increase safety by increasing aircraft separation both horizontally and vertically, by minimizing airport takeoffs and landings around local midnight, and by planning for communication failures. In the remaining regions of the world, over North America and Europe, less severe safety measures will be taken to increase aircraft separation because these regions are considered to be more ready for Y2K.

Another major ICAO activity is to create a Y2K readiness database called the Aeronautical Information Circular (AIC) Y2K compliance report. This information has been gathered through member states. Submissions were due by July 1, 1999. This information will be accessible through a password protected, online database and made available to the member states' representatives to ICAO. This information will be used at the discretion of the member states for purposes such as developing contingency plans or providing travelers' advisories.

The FAA has released a summary[28] of the input it provided to ICAO. Besides reporting on FAA's Y2K readiness, the report also covers 113 U.S. airport operators and 168 U.S. airlines providing international service. The FAA actually did not have reports on 7 of the airports and 22 of the airlines. In the case of the airports, 83% said they would complete their Y2K work by September 1999 and all 106 said they would be done by December 1999. For the airlines, only 119 reported Y2K completion dates. Of these 119, again 83% said

they would be done in September and all would be done in December. At the time of this Committee's report, there still are 7 U.S. airports and 49 U.S. airlines that have not released Y2K completion dates.

In testimony on September 9, 1999 before the Subcommittee on Technology, House Committee on Science, the DOT Inspector General reported that as of August 31, 1999, 53 of the 185 ICAO countries ICAO surveyed had not responded. That number has since been revised and the list of the 35 countries that have not responded has been published.[29] The nations not responding to the ICAO survey were: Albania, Angola, Bhutan, Bosnia and Herzegovina, Brunei, Burundi, Cambodia, Comoros, Cook Islands, Democratic Republic of Congo, Fiji, Guinea, Iraq, Kiribati, Kyrgyzstan, Lesotho, Libya, Micronesia, Mozambique, Myanmar, Nauru, Nicaragua, Palau, Papua New Guinea, Qatar, Russia, Samoa, San Marino, Sao Tome and Principe, Sierra Leone, Slovenia, Solomon Islands, Tajikistan, Tonga and Vanuatu.

The other major players in international aviation activities are the International Air Transport Association (IATA),[30] which is a trade association of more than 260 airlines and the Airports Council International (ACI), a nonprofit organization of 531 airports and airport authorities that represents more than 1,400 airports in 165 countries.

The IATA program aims to increase member airlines' Y2K awareness and preparations, and targets 100% of the international airports and ATS providers used by member airlines. The data collection activity is being coordinated through a Lead Airline Program to minimize overlapping data requests. Through its program, IATA has gathered data for more than 600 airports serving its member airlines. It has also visited more than 140 countries to assess air traffic control services. The data IATA has collected is being made available only to IATA members.

ACI has given its 1,350 member airports assessment tools and a list of systems, which may require assessment. In addition, both IATA and ACI have been supporting the ICAO efforts.

One final party is the International Federation of Air Line Pilots Associations (IFALPA), a nonpolitical, nonprofit organization that represents more than 100,000 pilots in more than 90 member associations around the world. The principal officers of IFALPA established a Y2K Task Force in July 1999.[31] Its objective is to provide members with a guidance document to help pilots flying during the millennium rollover period.

Two issues that have arisen within the IFALPA task force are the need for flight crew training for Airborne Collision Avoidance Systems, especially given the variety of such systems deployed, and communications failure familiarization training. According to the August 1999 IFALPA newsletter, "*The Task Force believes that as airline training programmes are set many months in advance*

there is a high probability that if appropriate instruction is not given to aircrew as a matter of urgency, it will soon be too late." [32]

Maritime Shipping and Ports

The maritime industry is crucial to the nation's economy and national security. An estimated 95% of America's imports and exports go through its ports. The Y2K leadership for this enterprise has fallen to the U.S. Coast Guard. Specific Cost Guard actions include:

- Remediating or replacing systems upon which vessels rely for safe navigation and that port commanders rely for managing vessel traffic. The Coast Guard still had 5 mission critical systems to complete as of the 10th OMB quarterly report dated September 13, 1999. All systems are projected to be compliant by September 30, 1999. Contingency plans exist for all five systems should there be any schedule slippages.
- After the December 1998 UN meeting of Y2K coordinators from around the world, the Coast Guard assumed the responsibility for raising awareness and spurring action internationally. This led to an International Maritime Organization (IMO) conference in March 1999 Year 2000 Code of Good Practice, Circular 2121.[33] As reported in the President's Y2K Council's third quarterly assessment, the U.S., Canada, Mexico, Singapore, Indonesia, Australia, Germany, and the United Kingdom have publicly stated that this circular will be the basis for Year 2000 enforcement policy in their ports. The Coast Guard has continued this outreach and leadership including events associated with the UN Y2K coordinators' meeting in June 1999 and the G7 Meeting in September 1999. Table 2 is extracted from the materials associated with Circular 2121 and illustrates potentially vulnerable areas at marine ports and terminals.

Table 2: Port and Terminal Functional Areas that may be automated

- **Cargo Management**
- **Passenger and Crew Services**
- **Customs**
- **Waste Disposal**
- **Ship Repairs**
- **Waterway and Port Management**
- **Communications Systems**
- **Power Supply and Generation**
- **Security**
- **Health and Safety**
- **Environment**
- **Site Access**
- **Business Activities and Processes**
- **Asset Management**
- **Financial Systems**
- **Communications Systems**

- Issuing the "Year 2000 (Y2K) Reporting Requirements for Vessels and Marine Facilities" regulation[34] that requires owners and operators of certain vessels and marine facilities to report Year 2000 preparedness information. The purpose of this information is to help Captains of the Ports identify potentially hazardous situations during peak Y2K risk periods (for example, local midnight on December 31, 1999). This rule went into effect July 23, 1999 and expires March 31, 2000. The Coast Guard estimates that this rule will apply to

7,821 U.S. marine facilities, 37,171 U.S. vessels, and 5, 648 foreign vessels.

- Developing a "Maritime Y2K Contingency Plan Exercise Guideline" on how to provide practical guidance to maritime organizations on communicating Y2K readiness with partners in the Maritime Transportation System (MTS) and how to develop and exercise joint contingency planning drills.
- Coordinating a highly publicized contingency plan exercise with the Ports of Los Angeles and Long Beach; Arco, a local tug company; and APL, Ltd., an Oakland, California-based shipping line. The drill simulated contingency plans for various emergencies, including failure of automated propulsion control and communications outages. Similar drills are planned for San Francisco, New Orleans, Houston, Puget Sound, and New York.
- Producing a Navigation and Vehicle Assessment Circular, NVIC 7-99, on Year 2000 Risk Assessment and Mitigation Policy for Vessels and Marine Facilities. This document includes risk assessment guidelines for use by Captains of the Ports to identify and manage potential Y2K risks to traffic movement and port facilities.
- Halting vessels on September 8th and 9th for Y2K checks. Like many other organizations, USCG conducted a number of exercises and events to raise awareness and demonstrate commitment to Y2K preparedness in September. Approximately 150 ships failed the checks, and several vessels were barred from entering U.S. ports.[35]

Several MTS trade associations have been active raising Y2K awareness among members and support the transportation sector working group. Among these have been:

- The Chamber of Shipping of America, which in the early part of 1999 surveyed its membership of 17 U.S. companies that own, operate and/or charter U.S. and foreign owned vessels. Nine of the members responded, a response rate better than most trade associations the Committee has seen. All responses indicated an ongoing Y2K program, active contingency planning, and CEO level involvement. At the time of the survey, the average for the implementation of remediated mission critical systems was 44%. This survey is being updated and will be available in late September 1999. The Chamber also helped produce a Y2K awareness briefing used by the International Chamber of Shipping with member companies.
- A coalition of organizations has produced an awareness and planning document called "Practical Guidelines for Year 2000 Contingency Planning" that is being distributed with the support of Lloyd's Register.[36] The main purpose is to help "*ship operators, managers, and masters who are now looking to prepare*

their Contingency Plans."

- The American Association of Port Authorities (AAPA)[37] surveyed its membership of U.S., Canadian, Caribbean, and Latin American public ports in April 1999 on the current status of their Y2K mission-critical Work. The survey population was 145 ports and 49 responded: 37 U.S., 8 Canadian, and 4 Caribbean/Latin American. The U.S. ports were well into validation and implementation, while the Canadian ports were not far behind. The response for the Caribbean and Latin American ports, while favorable, was too small to make any general conclusions. The survey is soon to be redone and the new results made available in late September, 1999.
- The Lake Carriers Association, which represents 11 U.S. companies operating vessels on the Great Lakes, has surveyed its membership and reports all expect to be fully compliant by September 1999. About half report having contingency plans under development.
- The International Association of Independent Tanker Owners, INTERTANKO, did an earlier survey that collected responses from 119 companies. The survey found that 97% had a contingency plan in place and 67% expected to be compliant by October 1999. No update to the survey has been reported yet.
- The American Shipbuilding Association reported earlier in the year that, in a survey of its membership, it found that Y2K programs were underway across the membership and no significant problems were detected.

Railroads

Leadership within DOT for outreach to the railroads falls to the Federal Railroad Administration (FRA). The FRA reports full Y2K compliance with its internal systems. FRA does not operate safety critical systems and, for this reason, has concentrated on raising awareness at many railroad meetings and conferences, and working with the major associations in the railroad sector.

The second quarterly assessment produced in April 1999 by the President's Y2K Council reported, "*According to a January 1999 survey by the Association of American Railroads … widespread testing by railroads and signal suppliers has uncovered no Y2K problems that will impact railroad safety or signal operation.*" [38] However, in the third PCC report, the situation is less sanguine. That report says, "*In order to provide a greater degree of understanding of railroad preparedness, the Federal Railroad Administration is initiating an assessment of Y2K compliance of the four largest railroads in August 1999, with results expected in September. This oversight action is being taken in response to serious safety issues that arose as a result of computer problems that occurred in connection with recent railroad mergers*." [39]

In a letter to the Senate Special Committee, the FRA has stated, *"Accordingly, FRA has retained a consulting firm to review the Y2K readiness of operating data systems, yard management systems, dispatching systems, and electronic date interchange system of the four major freight railroads, which account for 80% of the railroad traffic in the US. FRA plans to hold its third workshop on October 8, at which time we will present the results of the assessment and also hear again form commuter railroad, short line and regional railroads, Amtrak, and railroad suppliers."* [41]

The two major associations in the railroad sector are the Association of American Railroads (AAR), which represents the eight Class 1 railroad remaining after the acquisition of Conrail, and the American Shortline & Regional Railroad Association (ASRRA), which represents the 431 Class 2 and 3 freight railroads (the rest of the freight railroad industry.) AAR's survey of its membership was referred to above. ASRRA has said it will not survey its members' Y2K readiness, but the President's Y2K Council reports that Y2K testing by these railroads was proceeding well. Few problems were expected to turn up among these small railroads with few, if any, computers.

Table 3: Typical [Y2K] Transit System Problem Areas[40]

- **Intelligent Transportation Systems**
- **Integrated Transportation Systems**
- **Advanced Traveler Information Systems**
- **Traffic Management Systems**
- **Traffic Signal Control Systems**
- **Freeway Management Systems**
- **Automatic Vehicle Location Systems**
- **Emergency Management and Dispatch Systems**
- **In-Vehicle Systems**
- **Records (licenses, rental transactions, etc.)**

Public Transit Systems

The U.S. has more than 5,000 transit agencies, including 2,200 bus systems and more than 5,200 "demand-response" systems. These systems will be among the very first public services to be used in the new year by both people celebrating New Year's Eve and by those on duty with the "millennium watch" shift. Table 3 identifies areas where public transit systems may experience Y2K problems.

The Committee asked the GAO to perform a brief, independent survey of an important part of public transit, the "Heavy Rail" component more commonly known as the subways or elevated railways in the major cities. The results of this study are presented in Appendix A of this chapter. The most significant findings are:

- At the time of the survey, August 1999, only half of the 14 Heavy Rail systems were ready for Y2K. The rest said they would have all transportation services ready by October 31.
- Nine systems had completed contingency plans.
- Only one system was not committed to testing its contingency plan.

- All systems would have a response center operational on December 31 for emergencies.
- Seven systems plan to stop trains at least temporarily at midnight local time; five systems do not plan to do so; and one system plans to halt only one train in the system.

The onus of reaching out to this sector rests on DOT's Federal Transit Administration (FTA). After an early 1998 survey by the American Public Transit Association (APTA)[42] indicated a low level of activity among public transit agencies, the FTA took action toward the end of 1998.

The first step was an October 16, 1998 letter to all Transit Authorities emphasizing that "*under the Capital and Formula Grant Programs, all grantees are required to have the legal, financial, and technical capability to carry out the project. Technical capability encompasses Y2K; hence, grantees must be Y2K compliant to receive funds from FTA*." The letter went on to lay out a list of Y2K milestones for all grantees, and ended with a requirement for a letter of compliance from all authorities by June 30, 1999. If an authority could not declare compliance by that date, a letter was required that outlined contingency plans for continuing operations while repairing or replacing Y2K non-compliant systems.

A second letter followed up the initial letter in March 1999 to all state departments of transportation and transit authorities reminding them of the requirements and emphasizing the need for contingency plans. As of September 10, 1999, FTA had received had received 539 responses from its 545 Transit Grantees. After analyzing the returns, FTA report that 67% of the grantees report they are compliant, 24% report they are not compliant, but have a work-around plan, 7% did not correctly respond, and 2% have not responded yet. The FTA has also recently requested copies of the complete contingency plans of the largest 30 transit systems.

One further action taken by the FTA and the President's Y2K Council was to hold a public transit roundtable on July 14, 1999. Attendees were from the federal government, major transit authorities, transit associations, and transit vehicle manufacturers. A few findings of this roundtable were:

- Several transit authorities expect to be used to unprecedented levels on December 31 due to millennial celebrations (including Boston, New York and Washington, D.C.), which has required the development of extensive contingency plans.
- Y2K does not appear to be an insurmountable problem for the industry, but there is the often-cited caveat concerning dependencies on external utilities, especially electric power and telecommunications.
- A number of providers are incorporating brief stand-down periods as an operational precaution on either side of midnight on December 31, 1999. For instance, buses will remain at curbside and

subway cars will remain in station. The overall prevalence of this approach was not addressed at the roundtable.

On the private sector side, APTA has been perhaps the most active player. APTA has conducted conferences and workshops, surveyed equipment manufacturers,[43] and published information products regarding Y2K preparations.[44] The Community Transit Association of American has produced another useful product called "Managing Millennium Madness: Y2K and Your Transit System."[45]

Automobiles, Trucks, and Traffic Control

The National Highway Traffic Safety Administration surveyed[46] the major automobile manufacturers. The respondents manufacture more than 90% of the cars and trucks in the U.S. All responded that Y2K would not affect the safety or performance of their vehicles.

The American Trucking Associations, Inc. (ATA) surveyed its membership in February.[47] While only 190 responses were returned, the results represented a cross section of the industry. Those responding had good programs in place and were well on their way to completion. The Association plans to release in November the results a second survey that it initiated in September 1999.

There is a real danger in reading too much into surveys such as that done by the ATA. The Committee is concerned that the results represent only the proactive and well-prepared members of the sample set and cannot be extrapolated to the non-responding portion. In addition, there is real concern that the mid-sized firms in this sector may be at risk since it is generally believed that large firms have the resources to handle the problem while small firms are not heavily automated and, thus, are not particularly vulnerable. The mid-size firms are believed to be automated enough to be vulnerable in their business processes but not large enough to have adequate IT resources to fix the problem.

There are Y2K vulnerabilities in traffic signal systems. As pointed out on the DOT Y2K website, *"Traffic signals will work in a safe mode as long as power is available. If computers malfunction, signal timing could operate out of coordination, causing inconvenience to motorists. In the worst case, signals could revert to the emergency flash mode. A very small number of intersections may have back-up generators, but it is a rare case for an individual intersection to have back-up power. The only known safety issue relates to jurisdictions where traffic signal control equipment is used to operate reversible lane control signs. If the control software does not recognize the Year 2000 conversion, the wrong day-of-week command may be issued to the lane control signs."*[48]

In several tests around the country, traffic control systems have been rolled over to the Year 2000 with no damaging effects. Two places where this has been done are Montgomery County, Maryland, and Lynnwood,

Washington. However, the responsibility for operating these systems resides at the state and local level. The Federal Highway Administration has posted this statement, *"A major concern of the FHWA and the Department of Transportation is how ready State and local governments are for the Year 2000 for their own information systems and for the operational transportation systems that they run, such as their traffic management systems, traffic signal systems, and other Intelligent Transportation Systems they operate."*[49]

The Committee is not aware of any systematic surveys in this area. Searches of websites linked with the DOT Y2K outreach website[50] did not produce any quantitative assessments of this potential problem. However, as part of the Committee's July 15, 1999 Hearing on State and Local Government preparedness, GAO was asked to survey the readiness of the 21 largest U.S. cities.[51] In conducting this survey, GAO found that as of the date of the hearing, six of the largest cities did not have their transportation services ready for Y2K. In four of the six cases, Chicago, Columbus, Detroit, and San Jose, it was the traffic signals that weren't ready. Estimated readiness dates for these services varied from July 1999 to November 1999.

EXPECTATIONS AND CONCERNS

Y2K readiness is changing rapidly in all sectors as we approach December 31. As a result, all written and published projections become quickly dated. The best course of action is to identify credible sources of information; to keep abreast of status information as January 1, 2000 approaches; and to always be aware of how old information is when it describes Y2K status.

A substantial number of readiness surveys and assessment activities are still to be completed in the final months of 1999; below are a number of significant reports to be completed in the transportation sector:

- Aviation
  - ICAO summary of aviation worldwide: September 1999
  - FAA assessments of domestic airports: October 1999
  - DOT and State Department travel advisories: September 1999
- Marine Transportation
  - AAPA's updated survey of Western hemisphere ports: September 1999
  - Chamber of Shipping of America's updated survey: September 1999.
- Railroads
  - Federal Railroad Administration assessment of four largest freight railroads in US: October 1999
- Trucking and Public Transit
  - American Trucking Associations, Inc. updated survey: November 1999

To date, a few airlines have announced that they will not fly for some period of time during the cen-

tury change. These include the Polish airline (LOT), the Vietnamese national airline, and Virgin Atlantic.[52]. As pointed out earlier, regional contingency plans in many parts of the world call for reducing potential flight capacity by greater aircraft separations, but this is anticipated to have little delaying effect since flight volume will already be reduced by normal flight patterns.

There are reports of increased demand for trailers as part of many sectors' contingency plans. The president of Transport Corporation of America has said, "*We anticipate that at least some folks will try to use our trailers as warehouse space*," either by arrangement with the company or by slowing down the turnaround process to empty a trailer and put it back in service. "*The detention charge [late fee] for our trailers is likely to go up dramatically soon*." In addition, the ATA reports that, "*Trade analysts expect truck lines to raise rates as fuel prices rise and shippers increase their inventories to hedge against potential problems caused by the Y2K computer bug."* [53]

For some segments of the transportation sector, Y2K has been a spur to economic activity. According to a survey conducted by Information Week, "*Cargo shipments that would have normally been scheduled for the first quarter of 2000 are being booked for the second half of this year."*[54] One shipping company official is quoted as saying, "*Eighty percent of our customers want to import now rather than take a chance early next year."*

Finally, there are occasional reports in the travel industry of a slackening of bookings for the New Year's period. The travel industry passed a major milestone in the early part of 1999 when it demonstrated that its reservations systems could handle dates in the next century. But for reasons that are not clear yet, actual bookings for travel are not up to expectations, although according to one survey, fear of Y2K travel glitches is not the major factor.[55]

However, this situation may be changing. As this report was going to press, American Airlines announced[56] that it was reducing the number of scheduled flights for December 31st and January 1st even more than it did last year. And the Los Angeles Times reported,[57] *"Travel industry observers say American's move is not unusual, and they expect other airlines to pare back their schedules over the year-end holiday as well. 'I think you'll probably see them all adjust their schedule that weekend,' said Tom Parson, publisher of online consumer magazine Best Fares. It's not uncommon on holidays and weekends 'for airlines to cut back on their traffic.' But he said bookings this year will be particularly scant for a number of reasons. Most people who go away over New Year's like to be at their destination by Dec. 31. New Year's Day falls on Saturday, which is typically a light travel day, and will be compounded by some travelers who will stay home because of fears about year 2000 computer problems."*

Appendix A: GAO Survey of Public Transit Heavy Rail Systems

Agency	Currently Y2K Ready	Fully Y2K Ready By October 31, 1999	Fully Y2K Ready By December 31, 1999	Has Completed Contingency Plans?	Testing of Contingency Plans:	Status of training for Contingency Plans:	Operations Response Center will be established?	Trains will be Stopped at Midnight on December 31, 1999
MARTA (Atlanta, GA)		X		No	Ongoing	Ongoing	Yes	Yes
Maryland MTA (Baltimore, MD)	X			Yes	Ongoing	Complete	Yes	Yes
MBTA (Boston, MA)	X			Yes	Ongoing	Planned	Yes	Undecided
CTA (Chicago, IL)	X			Yes	Planned	Planned	Yes	Yes
GCRTA (Cleveland, OH)		X		Yes	Ongoing	Ongoing	Yes	No
Metro (Los Angeles, CA)		X		Yes	Planned	Planned	Yes	Yes[3]
MDTA (Miami, FL)		X		Yes	Ongoing	Ongoing	Yes	Yes
NYCTA (New York, NY)			X[1]	Yes	Ongoing	Ongoing	Yes	No
SIRTOA (New York, NY)	X			Yes	Ongoing	Ongoing	Yes	No
PATH (New York, NY)	X			No	Planned	Planned	Yes	No
PATCO (Philadelphia, PA)	X			No	Undecided	Undecided	Yes	No[4]
SEPTA (Philadelphia, PA)		X		No[2]	Ongoing	Not Planned	Yes	Yes
BART (San Francisco, CA)	X			Yes	Ongoing	Not Planned	Yes	Yes[5]
WMATA (Washington, DC)		X		No	Planned	Planned	Yes	Yes

1. Remaining NYTCA work does not involve the delivery of transportation services.
2. SEPTA's plans are completed for transportation systems, but not IT systems.
3. Metro (Los Angeles) normally stops at 10:00 PM.
4. PATCO will stop one train at one platform only. Others in the system will keep running.
5. BART plans to stop as many trains as possible, at or near a station, 5 to 10 minutes before the hour, starting at 9:00 PM.

[1] Washington Post, September 9, 1999, p. G02.

[2] Washington Post, September 15, 1999; p. A01.

[3] Washington Post, August 24, 1999, p. A12.

[4] "Transportation After Y2K: Can We Get There From Here?", Sept. 10, 1998, S. Hrg. 105-777.

[5] http://y2k.senate.gov/hearings/990422/

[6] http://www.y2k.gov/new/3rdquarterly.html

[7] http://www.y2ktransport.dot.gov

[8] hazmat.dot.gov/rules/not99_7.htm

[9] http://www.dot.gov/fly2k/

[10] http://www.house.gov/science/meade_090999.htm

[11] http://ops.dot.gov/y2k.htm

[12] Testimony of John Koskinen, July 29, 1999 before the Senate Special Committee. See y2k.senate.gov

[13] http://www.faay2k.com/html/news.html

[14] Memorandum from Raymond DeCarli, Deputy Inspector General to FAA Administrator, July 16, 1999.

[15] http://www.faay2k.com/html/ContingencyPlan.html

[16] http://www.aviationmillennium.org/index.html

[17] http://www.aviationmillennium.org/resources/7199pr.html

[18] http://www.boeing.com/news/releases/1999/news_release_990416a.html

[19] "Airports' Efforts to Prepare for the Year 2000," GAO/RCED/AIMD-99-57. Available at http://www.gao.gov

[20] http://www.faa.gov/arp/arp-y2k.htm

[21] http://www.faa.gov/arp/y2kapts.pdf

[22] http://www.faa.gov/avr/arm/n-99-xx.pdf

[23] http://dms.dot.gov. Search on FAA-1999-5924

[24] http://www.house.gov/science/garvey_090999.htm

[25] http://y2k.airportnet.org

[26] http://www.house.gov/science/airportcouncil_090999.htm

[27] http://www.icao.org

[28] http://www.faay2k.com/html/US_ICAO_InfoMiddle.html

[29] Washington Post, September 11, 1999; Page A09

[30] http://www.iata.org/y2k

[31] http://www.ifalpa.org/newslink/99NWS001.pdf

[32] "NEWSLINK," IFAPLA, http://www.ifafalpa.org, August 1999, p. 2.

[33] http://www.imo.org/imo/y2k/circlet/2121.pdf

[34] http://www.uscg.mil/hq/g-m/nvic/7_99/n7-99.pdf

[35] Reuters, "US Coast Guard Steps up Y2K checks of cargo ships," 19:13:36, 09 September 1999.

[36] http://www.lr.org

[37] http://www.aapa-ports.org

[38] http://www.y2k.gov/new/FINAL3.htm

[39] http://www.y2k.gov/new/3rdquarterly.html

[40] http://www.fta.dot.gov/Y2K/typical.htm

[41] Letter from Deputy Administrator, FRA, to Chairman, Special Committee on the Year 2000 Technology Problem, August 27, 1999.

[42] http://www.apta.com

[43] http://www.apta.com/y2k/bus_survey_results.htm

[44] See "ON TRACK – Y2K," on the APTA website, http://www.apta.com/y2k

[45] http://www.ctaa.org/ntrc/rtap/pubs/ib/y2k.shtml

[46] http://www.nhtsa.dot.gov/nhtsa/whatis/y2k/Y2Ksurv.html

[47] http://www.trucking.org/infocenter/topics/y2k/y2k_survey.html

[48] http://www.y2ktransport.dot.gov. Look at the FAQ's link.

[49] http://www.fhwa.dot.gov/y2k/

[50] http://www.y2ktransport.dot.gov

[51] http://www.gao.gov/corresp/AI99246R.PDF

[52] http://www.virgin-atlantic.com/main.asp?page=1.1.2.1

[53] "Y2K Anxiety Driving Sector to Higher Pricing, Analysts Say," Transport Topics, 2200 Mill Road, Alexandria, VA, 22314. July 15, 1999.

[54] http://www.informationweek.com/733/y2ktran.htm

[55] http://www.computerworld.com/home/print.nsf/all/990809B99E

[56] http://www.amrcorp.com/news/sep1499.htm

[57] Los Angeles Times, September 15, 1999.